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None

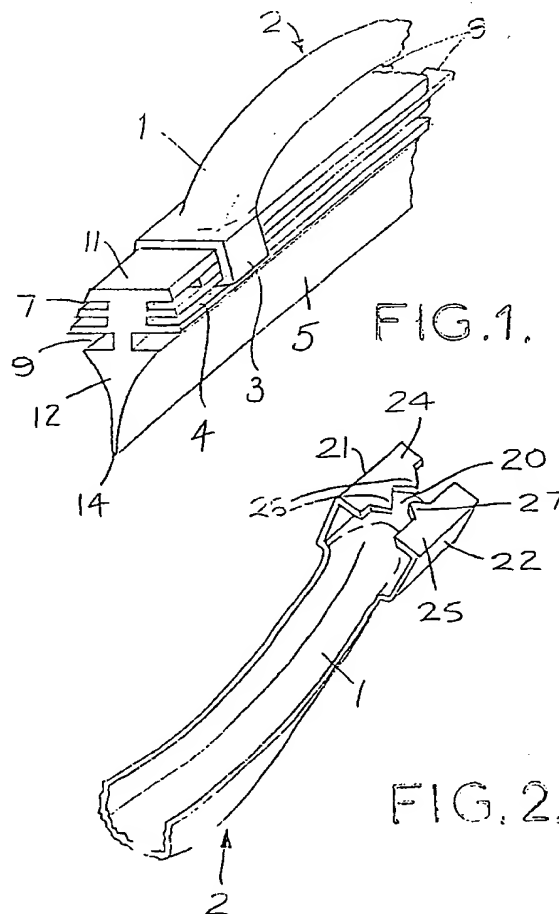
(58) Field of search

A4F

Selected US specifications from IPC sub-class B60S

(54) **Windscreen wiper blade**

(57) A windscreen wiper blade comprising a blade rubber (5), a vertebra or backing strip (8) for the blade rubber (5) and a harness for connecting the blade rubber (5) and/or vertebra or backing strip (8) to a windscreen wiper arm, is characterised in that the harness comprises a yoke (2) having a claw (3) for engagement with the blade rubber (5), the claw (3) having opposing teeth (26,27) which penetrate the material of the blade rubber (5).



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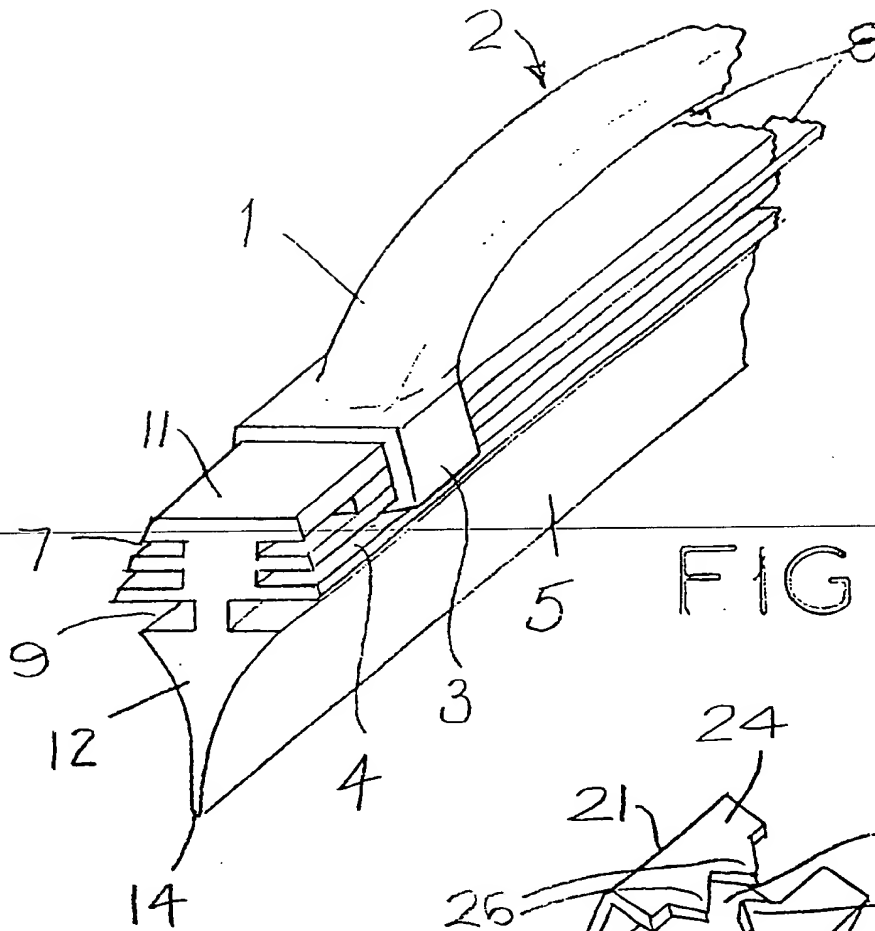


FIG. 1.

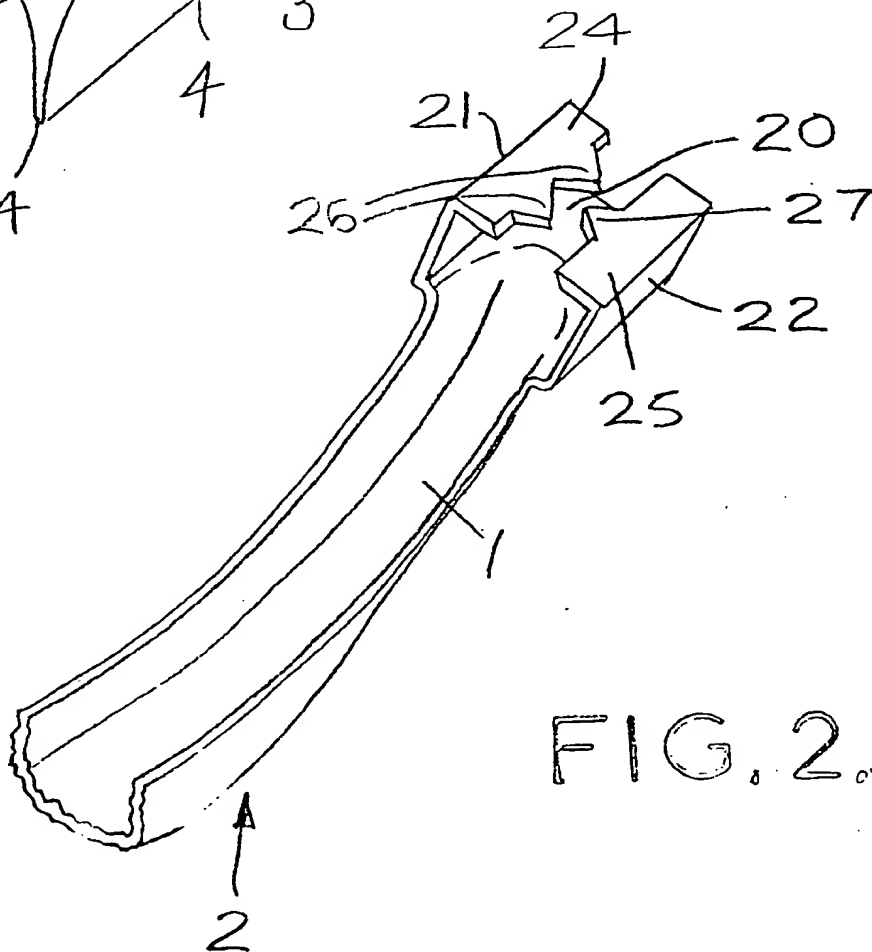


FIG. 2.

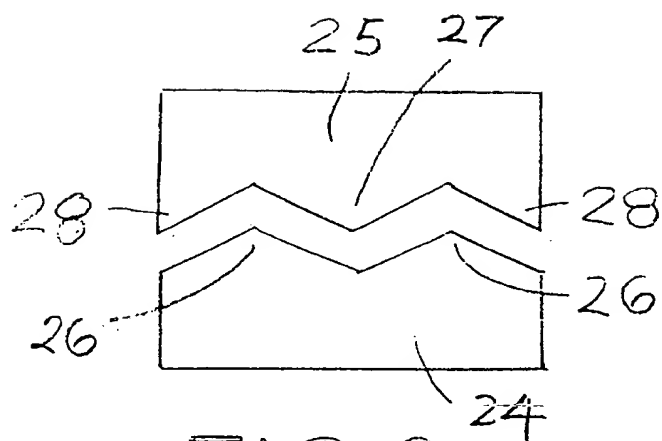


FIG. 3.

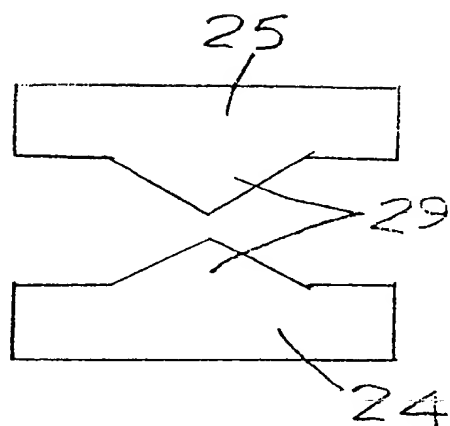


FIG. 4.

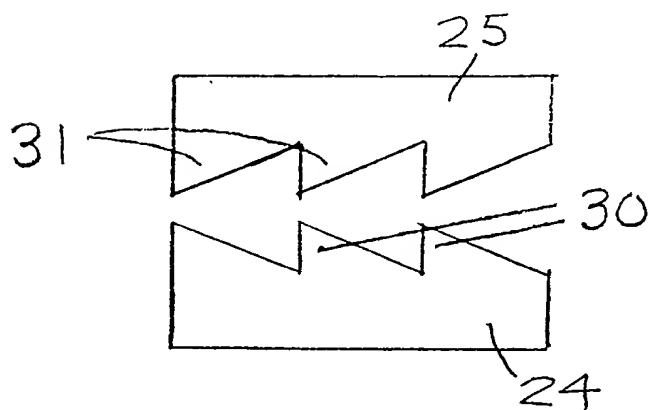


FIG. 5.

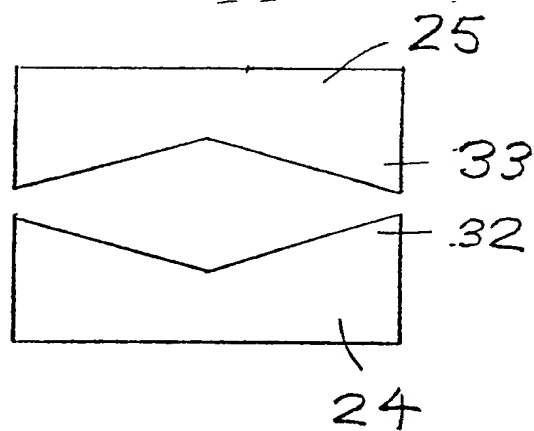


FIG. 6.

SPECIFICATION

Windscreen wiper blade

5 This invention relates to windscreen wiper blades.

With the modern tendency to use, wherever possible, extruded components, retention difficulties occur where it is necessary to retain a long element in a predetermined relationship to other parts of a device. This is particularly so when an extruded blade rubber of a windscreen wiper is to be retained in the harness of a wiper blade so that, while it has a certain amount of longitudinal movement with respect to the various members of the harness individually, it must exhibit no significant overall longitudinal motion.

The present invention seeks to provide a windscreen wiper blade construction which is usable with an extruded blade rubber, as well as with conventional moulded rubbers and which overcomes or reduces some or all of the above disadvantages.

According to the invention, there is provided a windscreen wiper blade comprising a blade rubber, a vertebra or backing strip for the blade rubber and a harness connecting the blade rubber and/or vertebra or backing strip to a windscreen wiper arm, wherein the harness comprises a yoke having a claw for engagement with the blade rubber, the claw having opposing teeth which penetrate the material of the blade rubber.

The opposing teeth may be interdigitated or may be directly opposed. The number of teeth on each side of the claw may be the same or the number of teeth on one side of the claw may differ from the number of teeth on the other side of the claw, preferably by one.

The invention will now be described in greater detail, by way of example, with reference to the drawings, in which:-

Figure 1 is a perspective view of one end of a windscreen wiper blade incorporating a claw structure in accordance with the invention;

Figure 2 is a perspective view of the end of a yoke element as shown in figure 1, from below, and

Figures 3 to 6 show various designs of a claw in plan view.

Referring firstly to figures 1 and 2, there is shown one end 1 of a secondary yoke of a windscreen wiper blade. This end 1 is provided with a claw construction indicated at 3 which engages a longitudinal slot 4 in the blade rubber 5. As can be seen from figure 1, the blade rubber, which need not actually be rubber, has a trapezoidal body with three sets of longitudinal slots. The upper slot 7 is intended to receive a vertebra or backing strip, here shown as a so-called "twin rail" vertebra 8. The second slot 4 is for the claw 3 and the third slot 9 forms a neck 10 between the body 11 of the blade rubber 3 and the part 12 carrying the wiping edge 14, allowing this part 12 to flex relative to the body 11.

As can be more particularly seen from figure 2, the secondary yoke 2 is of generally channel shaped cross section ending in a hollow rectangular claw construction 3. This claw construction 3 comprises a

base portion 20 to which the main part of the secondary yoke 2 is connected and two side walls 21, and 22 extending away from the yoke 2 at a slightly obtuse angle to the base portion 21. The outer edges of these side walls 21 and 22 each have an inwardly directed member 24 or 25, lying parallel to the base 21. The members 24 and 25 carry opposed teeth. In the present embodiment, the member 24 carries two teeth 26 while the member 25 carries one tooth 27.

As can be seen, the teeth 26 and 27 are interdigitated.

It will be appreciated that figure 2 shows the position of the teeth 26 and 27 in what would be the assembled state. Prior to assembly, the teeth 26, 27 would be more spaced apart to allow for the insertion of the blade rubber 5.

To assemble the blade, the harness, usually comprising a main yoke and subsidiary yokes, is put together and the blade rubber is threaded through the claws of the subsidiary yokes and, in particular, through the claw 3. Once threading is completed, the claw 3 has its side walls 21 and 22 pushed towards each other to engage the teeth 26 and 27 in the blade rubber and retain the blade rubber longitudinally immovable relative thereto. It is of course to be understood that only one toothed claw 3 is provided in each harness so that the blade rubber can move longitudinally with respect to the other claws to enable it to follow the curvature of the windscreen on which it is being used.

Figures 3 to 6 show other possible forms of tooth configuration.

Figure 3 shows an arrangement of teeth similar to figure 2 but, in addition to the teeth 26 and 27, half teeth 28 are provided at the ends of the member 24.

Figure 4 shows an arrangement with two teeth 29, the teeth in this case being directly opposed.

Figure 5 shows an arrangement with three teeth 30 and 31 on each member 24 and 25 respectively. These teeth are of sawtooth formation which facilitates the insertion of the blade rubber (here from right to left).

Figure 6 also shows an arrangement with sawtooth shaped teeth. Two teeth 32 and 33 are provided on each member 24, 25 at opposite ends thereof, the direction of the slant edge of the teeth being towards the middle of the respective member 24, 25.

While in the above described embodiments, no provision has been indicated for retaining the vertebra, if these are not to be retained separately, they may be provided with notches at the location of the claws 3 so that, during final bending of the side walls 21 and 22, these side walls 21 and 22 come to lie in the notches.

It will be appreciated that various modifications or alterations may be made to the above described embodiment without departing from the scope of the invention. For example, the number and shape of the teeth could be varied from a normal minimum of two (figure 4) upwards.

It will also be appreciated that the types of vertebra used could be varied as could the cross section of the blade rubber, both being shown only as examples. Thus, for example, the body of the blade rubbers could be square or rectangle so that the two side

walls 21 and 22 extend parallel to each other. Instead of the twin rail vertebra shown, single rail vertebrae could be used, the vertebra either sitting in an upwardly opening undercut groove in the body of the blade rubber, passing through a passage in the blade rubber body or otherwise. Although the blade rubber shown is intended to be produced by extrusion, it will also be understood that a moulded blade rubber could be used.

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CLAIMS

1. A windscreen wiper blade comprising a blade rubber, a vertebra or backing strip for the blade rubber and a harness connecting the blade rubber and/or vertebra or backing strip to a windscreen wiper arm, wherein the harness comprises a yoke having a claw for engagement with the blade rubber, the claw having opposing teeth which penetrate the material of the blade rubber.

2. A windscreen wiper blade as claimed in claim 1 wherein the opposing teeth are interdigitated.

3. A windscreen wiper blade as claimed in claim 1, wherein the opposing teeth are directly opposed.

4. A windscreen wiper blade as claimed in claim 1, 2 or 3, wherein the number of teeth on each side of the claw are the same.

5. A windscreen wiper blade as claimed in claim 1, 2, or 3 wherein the number of teeth on one side of the claw is different from the number of teeth on the other side of the claw.

6. A windscreen wiper blade as claimed in claim 5, wherein there is one more tooth on one side of the claw than on the other.

7. A windscreen wiper blade substantially as described herein with reference to the drawings.

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